

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 29-54 were pending. Claims 53-54 have been withdrawn as being directed to a non-elected invention. By the present response, claims 29-33, 36, 38 and 42 have been amended, and claims 55-57 have been added. Thus, upon entry of the present response, claims 29-52 and 55-57 are pending and await further consideration on the merits.

Support for the foregoing amendments can be found, for example, in at least the following locations in the original disclosure: the original claims.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 29-35, 37, 39-41 and 43-52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over WO 03/029350 (with an English-language equivalent of U.S. Patent No. 7,323,241) to Myard et al. (hereafter "*Myard et al.*") on the grounds set forth on page 3 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The present invention is directed to a precursor article of a composite material which possesses certain benefits and advantages relative to state of the art materials. For example, the precursor material of the presently claimed invention exhibits a high melt flow of the matrix material which provides good impregnation of a reinforcement without reduction in mechanical properties or fatigue strength problems observed with similar state of the art low molecular weight polymers. An

article constructed according to the principles of the present invention is set forth in amended claim 29:

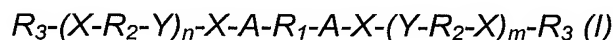
29. A precursor article of a composite material comprising a polymeric matrix and at least one reinforcing yarn and/or fibers, said precursor article comprising at least one reinforcing yarn and/or fibers and at least one polymeric-matrix yarn and/or fibers, wherein:

said reinforcing yarn and/or fibers are made at least in part of reinforcing material;

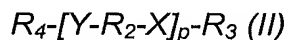
said polymeric-matrix yarn and/or fibers are made of a thermoplastic polymer,

said thermoplastic polymer of said reinforcing yarn and/or fibers and/or of said polymeric-matrix yarn and/or fibers comprises at least one polycondensate consisting of:

30 to 100 mol%, limits inclusive, of macromolecular chains satisfying the following formula (I):



0 to 70 mol%, limits inclusive, of macromolecular chains satisfying the following formula (II):



in which chains:

-X-, -Y- is a radical obtained from the condensation of two reactive functional groups F_1 and F_2 such that:

F_1 is the precursor of the -X- radical and F_2 is the precursor of the -Y- radical, or vice versa,

the functional groups F_1 cannot react together by condensation and

the functional groups F_2 cannot react together by condensation;
A is a covalent bond or an aliphatic hydrocarbon radical that may comprise heteroatoms and contains 1 to 20 carbon atoms;

R_2 is a branched or unbranched, aliphatic or aromatic hydrocarbon radical containing 2 to 20 carbon atoms;

R_3 , R_4 represents hydrogen, a hydroxyl radical or a hydrocarbon radical;

R_1 is a linear or cyclic, aromatic or aliphatic, hydrocarbon radical containing at least 2 carbon atoms and optionally including heteroatoms; and

n , m and p each represent a number between 30 and 200.

Myard et al. fails to disclose, or even suggest, the article recited in amended claim 29. *Myard et al.* discloses an article which may comprise a polymer matrix in the form of wire and/or fibers formed from a thermoplastic polyamide. However, the polyamide material disclosed by *Myard et al.* is distinctly different from the polymer of the presently claimed invention.

The precursor article defined by claim 29 includes a polymeric matrix yarn and/or fibers which comprises at least one polycondensate consisting of a combination of polymers defined by formulas (I) and (II). The polymer represented by formula (I) corresponds to a linear macromolecular chain obtained by polymerization of an A-B type monomer (carrying one function A, and another function B), in the presence of a difunctional monomer carrying two functions of the same type, e.g., AA or BB. The resulting chain is linear and has a specific mass distribution according to the growth of the chain during polymerization. This material can be schematically represented as follows:

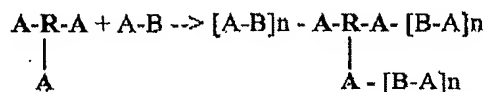


The polymer represented by formula (II) corresponds to a linear macromolecular chain of an $[A-B]_n$ type, but without the presence of a difunctional monomer.

By contrast, *Myard et al.* encloses an article which may include a polymeric matrix yarn formed from a polyamide possessing a star structure. This star structure is characterized as follows:

Star macromolecular chains comprising one or more cores and at least three polyamide segments bonded to a core. (column 3, lines 48-52)

This star-type polyamide structure can be schematically represented as follows:



As evident from the above, the star polyamide material disclosed by *Myard et al.*, with at least three macromolecular branches, is completely different from the linear polyamide material defined by claim 1. This is true even if the polymer described by formula (I) of the claimed invention can comprise an aliphatic hydrocarbon radical as part of the linear chain. For instance, taking this example, a polymer represented by this formula clearly specifies only two macromolecular branches (formed of $[\text{A-B}]_n$).

Therefore, for at least the reasons explained above, *Myard et al.* clearly fails to disclose, or even suggest, the polycondensate material defined by amended claim 29. Therefore, reconsideration and withdrawal of the rejection of claim 29 is respectfully requested.

The remaining claims rejected on the above-noted grounds depend from claim 29. Thus, these claims are also distinguishable over *Myard et al.* for at least the same reasons noted above.

Claims 29-52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,893,981 to Thoma et al. (hereafter "*Thoma et al.*") on the grounds set forth on page 4 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Thoma et al. is directed to a process for the production of basic modified polyamides. However, *Thoma et al.* clearly fails to disclose, or even suggest, the precursor article recited in claim 29.

As evident from the above, claim 29 is directed to a precursor article which comprises reinforcing yarn and/or fibers made at least in part of reinforcing material, and polymeric matrix yarn and/or fibers made of a thermoplastic polymer comprising at least one polycondensate defined in claim 29 as being a combination of polymers represented by formulas (I) and (II). However, the grounds for rejection fail to even allege that *Thoma et al.* discloses these aspects of the claimed article. Therefore, the grounds for rejection clearly fail to establish a *prima facie* case of obviousness.

In addition, the grounds for rejection allege that *Thoma et al.* discloses a polymer matrix that has recurring structural units that have "close structural similarities" to the generic formula (I) of claim 29. It is further alleged that the polymer disclosed by *Thoma et al.* "is the same or substantially similar to that claimed by applicants, and would have the same properties as the polymer of the generic formula (I)." However, a careful review of the grounds for rejection reveals that it is absolutely no analysis whatsoever with respect to identifying which specific elements of claim 29 are disclosed or suggested by *Thoma et al.*, and which elements recited in claim 29 are different and/or missing from the disclosure of *Thoma et al.* Therefore, the grounds for rejection clearly fail to satisfy the criteria necessary for establishing a *prima facie* case of obviousness as prescribed by *Graham v. John Deere*. Thus, the grounds of rejection fail to establish a *prima facie* case of obviousness for at least this additional reason.

Moreover, *Thoma et al.* is clearly directed to the formation of a star-type polyamide matrix of a type similar to that disclosed by *Myard et al.* In this regard, *Thoma et al.* discloses a polyamide made from polycondensation of lactams or aminocarboxylic acids, a monomer of the A-B type, in the presence of a triamine branching agent. Therefore, reconsideration and withdrawal of the rejection is respectfully requested for at least the reasons noted above.

The remaining claims rejected on the above-noted grounds depend from claim 29. Thus, these claims are also distinguishable over *Thoma et al.* for at least the same reasons noted above.

Claims 29-52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,160,080 to Cucinella et al. (hereafter "*Cucinella et al.*") on the grounds set forth on page 6 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Cucinella et al. is directed to a polyamide, and a method for its manufacture, as well as compounds containing it. However, *Cucinella et al.*, as is the case with the polymer disclosed by *Myard et al.* and *Thoma et al.*, is characterized as "a compound having at least three functions . . . the polyamide obtained in this way has at least part of these molecular chains in a star formation" (See, e.g., Abstract). Therefore, the polymeric material disclosed by *Cucinella et al.* is clearly distinguishable from that recited in amended claim 29. Therefore, *Cucinella et al.* fails to disclose or even suggest the polymer material disclosed in claim 29.

Moreover, claim 29 is directed to a precursor article of a composite material comprising reinforcing yarn and/or fibers made at least in part of a reinforcing material, as well as polymer matrix yarn and/or fibers made of a thermoplastic

polymer comprising at least one polycondensate as defined in amended claim 29.

However, the grounds for rejection fail to even allege that *Cucinella et al.* discloses these aspects of the presently claimed article. Therefore, the grounds for rejection are deficient in at least this additional regard.

Finally, it is alleged that the macromolecular chains disclosed by *Cucinella et al.* are "structurally similar to those formula (I) of present claim 29." It is further alleged that "it is the Examiner's position that where the general conditions of a claim were disclosed in the prior art, it is non-inventive to discover the optimum or workable ranges by routine experimentation." However, the grounds for rejection fail to identify which aspects of claim 29 are specifically disclosed by *Cucinella et al.*, and fails to specifically identify the differences between claim 29 in the disclosure of *Cucinella et al.* in a manner which would allow for a fair opportunity to meaningfully respond to the Official Action. There is not even an identification of which "conditions" are being optimized in order to satisfy the requirements of claim 29. For at least these additional reasons, the grounds for rejection clearly fail to satisfy the analytical framework required by *Graham v. John Deere*, and thus fail to establish a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejection is respectfully requested.

The remaining claims rejected on the above-noted grounds depend from claim 29. Thus, these claims are also distinguishable over *Cucinella et al.* for at least the same reasons as noted above.

OBVIOUSNESS-TYPE DOUBLE PATENTING

Claims 29-35, 37, 39-41 and 43-52 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 7,323,241 on the grounds set forth on page 9 of the Official Action. For the reasons previously explained herein with respect to the rejection of claims 29-35, 37, 39-41 and 43-52 on the basis of the disclosure of *Myard et al.*, of which the original claims are a part thereof, claim 29 is patentably distinguishable over the disclosure of *Myard et al.*, and is distinguishable over the claims thereof for the same reasons previously noted herein.

In particular, the precursor article recited in claim 29, including polymeric matrix yarn formed from at least one polycondensate formed by a combination of polymers defined by formulas (I) and (II) is neither disclosed nor suggested by the disclosure or the claims of *Myard et al.* Thus, reconsideration and withdrawal of the rejection is respectfully requested. The remaining claims rejected on the above-noted grounds depend from claim 29. Thus, these claims are also distinguishable over the claimed invention recited in *Myard et al.* for at least the same reasons noted above and elsewhere herein. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 29-52 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 22-42 of copending Application No. 10/565,870 on the grounds set forth on page 10 of the Official Action.

The analysis employed in an obviousness-type double patenting determination parallels the guidelines for establishing a rejection under 35 U.S.C. §103(a). Thus, the factual inquiries set forth in the *Graham v. John Deere* decision

must also be followed and applied. Thus, any obviousness-type double patenting rejection should make clear: "[A] the differences between the inventions defined by the conflicting claims;" and "[B] the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by or would have been an obvious variation of the invention defined in a claim of the [copending application]." M.P.E.P. §804.

The grounds for rejection clearly fall far short of making these two principle requirements clear. The grounds for rejection clearly fail to establish a *prima facie* case of obviousness-type double patenting.

In addition, it is noted that claim 29 is directed to a precursor article of a composite material comprising reinforcing yarn and/or fibers made at least in part of a reinforcing material, as well as polymeric-matrix yarn and/or fibers made of a thermoplastic polymer comprising at least one polycondensate material. The grounds for rejection do not even acknowledge these requirements of claim 29, much less contain any explanation of how the subject matter set forth in the claims of the above-identified copending application disclose or render obvious these aspects of the article recited in claim 29. Thus, the grounds for rejection are improper for at least this additional reason. Reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it

is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: June 3, 2010

By:

A handwritten signature in black ink, appearing to read "Scott W. Cummings", is written over a horizontal line. The signature is fluid and cursive.

Scott W. Cummings
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